IN THE SPECIFICATION:

Please replace paragraph 0002 (page 1) of the application with the following amended paragraph:

[0024] The present patent application hereby cross-references and incorporates by reference the entire contents of the following applications, each of which is filed on even date herewith: non-provisional U.S. application serial no. 10/680,528~~10/xxx,xxx (Atty. Dkt. P-11155.00)~~ entitled, “REFRACTORY PERIOD TRACKING AND ARRHYTHMIA DETECTION,” non-provisional U.S. application serial no. 10/680,462~~10/xxx,xxx (Atty. Dkt. P-11548.00),~~ entitled, “METHOD AND APPARATUS FOR CONTROLLING EXTRA-SYSTOLIC STIMULATION (ESS) THERAPY USING ISCHEMIA DETECTION,” non-provisional U.S. application no. 10/680,494~~10/xxx,xxx (Atty. Dkt. P-11354)~~ entitled, “METHOD AND APPARATUS FOR OPTIMIZATION AND ASSESSMENT OF RESPONSE TO EXTRA-SYSTOLIC STIMULATION (ESS) THERAPY,” non-provisional U.S. application serial no. 10/680,695~~10/xxx,xxx (Atty. Dkt. P-11193)~~ entitled, “MULTIPLE PACING OUTPUT CHANNELS~~,” provisional U.S. application serial no. 60/xxx,xxx (Atty. Dkt. P-11438.00) entitled, “CARDIAC PACING MODALITY HAVING IMPROVED BLANKING, TIMING, AND THERAPY DELIVERY METHODS FOR EXTRA-SYSTOLIC STIMULATION PACING THERAPY,” and provisional U.S. application serial no. 60/xxx,xxx (Atty. Dkt. P-11359.00) entitled, “SECURE AND EFFICACIOUS THERAPY DELIVERY FOR AN EXTRA-SYSTOLIC STIMULATION PACING ENGINE~~.”

Please replace paragraph 0008 (pages 2 and 3) with the following amended paragraph:

[0008] In general medical devices used to deliver ESS therapy, such as implantable pacemakers, include sense amplifiers coupled to electrodes that detect cardiac depolarizations. The medical devices may, for example, control the timing of delivery of pacing and ESS pulses, confirm that pacing and ESS pulses captured the heart, and detect arrhythmias based on detected depolarizations. However, the myocardial tissue proximate to electrodes typically becomes polarized temporarily for a period of time subsequent to delivery of an ESS therapy stimulation pulse via the electrodes, which can lead to saturation of the sense amplifier coupled to the electrodes until the polarization dissipates. Often, the sense amplifier is blanked, e.g., decoupled from the electrodes, for a period of time, e.g., a blanking period, following delivery of a stimulation pulse to avoid saturation of the sense amplifier.

Please replace paragraph 0025 (page 5) with the following amended paragraph:

[0025] FIG. 1 is a conceptual diagram illustrating an exemplary medical device system 10, which includes an implantable medical device (IMD) 12 implanted within a patient 14. IMD 12 delivers extra-systolic stimulation (ESS) therapy to the heart 18 of patient 14. In the illustrated embodiment, IMD 12~~10~~ takes the form of a multi-chamber cardiac pacemaker.

Please replace paragraph 0034 (page 9) with the following amended paragraph:

[0034] FIG. 2 is a conceptual diagram further illustrating system 10. In some embodiments, each of leads 16 includes an elongated insulative lead body carrying a number of concentric coiled conductors separated from one another by tubular insulative sheaths. Located adjacent distal end of leads 16A, 16B, and 16C are bipolar electrode pairs 40 and 42, 44 and 46, and 48 and 50 respectively. In the illustrated embodiment, electrodes 40,44,48 take the form of ring electrodes, and electrodes 42,46,50 take the form of extendable helix tip electrodes mounted retractably within insulative electrode heads 52,54,56 respectively. Each of the electrodes 40,42,44,46,48,~~-~~50 is coupled to one of the coiled conductors within the lead body of its associated lead 16.

Please replace paragraphs 0035 and 0036 (page 9) with the following amended paragraphs:

[0035] In the illustrated embodiment, IMD 12~~10~~ also includes indifferent housing electrodes 64 and 66, formed integrally with a hermetically sealed housing 68 of IMD 12. In some embodiments, IMD 12 delivers pacing and ESS stimulation to one or more of chambers 20, 26 and 28 via the respective one or more of bipolar electrode pairs 40 and 42, 44 and 46, and 48 and 50. In other embodiments, IMD 12 delivers unipolar pacing and ESS stimulation to one or more of chambers 20,26,28 via the respective one or more of tip electrodes 42,46,50 in combination with one of housing electrodes 64 and 66.

[0036] In exemplary embodiments, IMD 12 delivers cardioversion and/or defibrillation therapy to heart 18 via one or more of elongated coil electrodes 58,60,62. In the illustrated embodiment, coil electrodes 58 and 60 are carried on lead 16A, and coil electrode 62 is carried on lead 16B. Coil electrodes 58,~~-~~60,~~-and-~~62 are located in the SVC 22, right ventricle 20, and coronary sinus 24, respectively. Coil electrodes 58,60,~~-~~62 are fabricated from platinum, platinum alloy or other materials known to be usable in implantable defibrillation electrodes, and may be about 5 cm in length.

Please replace paragraph 0046 (pages 12 and 13) with the following amended paragraph:

[0046] Sense amplifiers 84, 88 and 92 take the form of an automatic gain controlled amplifiers providing an adjustable sensing threshold as a function of the measured P-wave or R-wave amplitude. Sense amplifiers 84,88,92 generate signals on RA out line 86, RV out line 90~~88~~ and LV out line 94~~92~~, respectively, whenever the signal sensed between the electrodes coupled thereto exceeds the present sensing threshold. Thus, sense amplifiers 84,88,92 are used to detect intrinsic right atrial, right ventricular, and left ventricular depolarizations, e.g., P-waves and R-waves, respectively.

Please replace paragraphs 0050 and 0051 (pages 14 and 15) with the following amended paragraphs:

[0050] Electrodes 58-62 are coupled to defibrillation circuit 98, which delivers defibrillation and/or cardioversion pulses under the control of microprocessor 70. Defibrillation circuit 98 includes energy storage circuits such as capacitors, switches for coupling the storage circuits to electrodes 58-62, and logic for controlling the coupling of the storage circuits to the electrodes to create pulses with desired polarities and shapes. Microprocessor 70 may employ an escape interval counter to control timing of such defibrillation pulses, as well as associated refractory periods. IMD 12~~10~~ may include defibrillator functionality where patient 14~~12~~ has a history of tachyarrhythmia, or to address possibility of tachyarrhythmia associated with ESS therapy. In some embodiments, microprocessor 70 analyzes an electrogram signal that represents electrical activity of heart 18 to, for example, detect cardiac arrhythmias. Switch matrix 96 is used to select which of the available electrodes 40-50 and 58-66 are coupled to wide band (0.5 -200 Hz) amplifier 100 for use in digital signal analysis. Selection of electrodes is controlled by microprocessor 70 via data/address bus 74, and the selections may be varied as desired. The analog signals derived from the electrodes selected by switch matrix 96 and amplified by amplifier 100 are converted to a multi-bit digital signal by A/D converter 102, and the digital signal is digitally processed by microprocessor 70. In some embodiments, the digital signal is stored in RAM 72 under control of direct memory access circuit (DMA) 104 for later analysis by microprocessor 70.

[0051] Although described herein in the context of a microprocessor-based pacemaker embodiment IMD 12~~10~~, the invention may be embodied in various implantable medical devices that include one or more processors, which may be microprocessors, controllers, digital signal processors (DSPs), field-programmable gate arrays (FPGAs), or other digital logic circuits.

Please replace paragraphs 0055 and 0056 (pages 16 and 17) with the following amended paragraphs:

[0055] FIGS. 5 and 6 are conceptual diagrams illustrating additional example medical device systems 140,150 according to the invention. In particular, systems 140,150 illustrate alternative configurations of leads 16 that may be employed according to the invention. Medical device 140, for example, includes a single lead 16C that extends to right atrium 26~~28~~ and a single lead 16A that extends to right ventricle 20 of heart 18. In such embodiments, IMD 12 can deliver ESS pulses to right ventricle 20 via electrodes 40,42, and sense electrical activity within right ventricle via any combination of electrodes 40,48,50,58,60,64,66.

[0056] Medical device system 150 illustrated in FIG. 6 includes a single lead 16C that extends to right atrium 26~~28~~, and two leads 16A,16D that extend to right ventricle 20 of heart 18. Through the provision of two leads within right ventricle 20, IMD 12 of medical system 150 more effectively sense electrical activity within right ventricle 18 without employing the set of electrodes used to deliver ESS and pacing stimulation. Specifically, in exemplary embodiments, IMD 12 delivers stimulation via one of bipolar electrode pairs 40,42 and 152,154, and senses electrical activity via the other pair. Electrodes 152,154 take the form or ring and tip electrodes, respectively, and tip electrode 154 is an extendable helix tip electrode mounted retractably within insulative electrode head 156.

Please replace the Abstract of the present application (at page 27) with the following amended paragraph:

Techniques for delivering an extra-systolic stimulation (ESS) therapy to a heart of a patient are disclosed. An implantable medical device delivers ESS therapy~~stimulation~~, and in some embodiments pacing stimulation, to a chamber of the heart via a first electrode set. The implantable medical device senses electrical activity within the chamber via a second set of electrodes. In some embodiments, the implantable medical device is able to apply a shorter blanking interval than is typical in the pacing art to a sense amplifier coupled to the second set of electrodes, allowing the implantable medical device to better detect arrhythmias and evoked responses. A variety of electrodes may be used in conjunction with the present invention; including without limitation, tip, ring, coil, can-based, endocardial, epicardial, pericardial, cardiac vein-based, subcutaneous, and/or surface electrodes.